

Green Entrepreneurship: Study of Renewable Resources

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Abstract

This paper reveals the brief concept of Green Entrepreneurship. Country like India where traditional resources are constraints is thus, important to work on new renewable resources through breakthrough technologies. Objective of this paper is to point out benefits of green Entrepreneurship in the country, society and for individuals. Research is on gap analysis that what capacities we have in renewable resources and how much capacity we are using. India is blessed with the gift of Sun which is one of the greatest sources of renewable resource thus I would like to explore an area of working in solar energy and some other nonconventional energy resources which can sought out problems energy and can give feasible business model.

Key Words- *Green Entrepreneurship, Renewable resources, Solar Energy, Opportunities in Green Entrepreneurship.*

Introduction

India is a big country with the huge potential in the renewable energy sector that can help country's growth and development in enormous amount. India has one of the largest programs in the world for deploying renewable energy products and systems. Indeed it is the only country in the world to have an exclusive ministry for renewable energy development the Ministry of Non-Conventional Energy Sources. Specifically 3,700 MW are currently powered by renewable energy sources (3.5% of total installed capacity). This is projected to be 10,000 MW from renewable energy by 2012. These are enough reason for entrepreneurs to attract towards the Energy sector and to give their creative Exploration to the energy resources. Entrepreneurs are always eager to explore new opportunities in any sector. Green Entrepreneurship is also related to doing new innovative businesses in the energy sector, developing new technologies for better use of the resources. Today Engineers are choosing very difficult path of Entrepreneurship because of huge opportunities in the Green Sector. Traditionally environmental business has focussed its attention on how and why an existing firm can become greener. It has spent an substantial amount of time and effort examining the tool that can be used to make firm more sustainable and environmentally responsible and to find out new methods For going green. Today our Entrepreneurs and engineers are moving toward green technology, producing more sustainable resources like- solar Energy, thermal Energy, tidal energy, hydropower energy, biomass resources. Engineers can more likely moves toward Green entrepreneurship because they have necessary skills, competencies, know-how, fundamental knowledge they only need to identify opportunity and must have ability to want to take risk. Green Entrepreneurship will mainly provide the foundation for the creation and growth of viable commercially successful business venture. Entrepreneurs takes the time to understand market opportunities, they analysis the Gap and study the market scenario, prepares their full flesh business plan and come up with unique ideas and innovations. They serve their products to uncaptured market and able to create their own niches.

Research Methodology

This paper is empirical research and case study based on the secondary data which is taken from various resources such as Indian government policies, magazines, dailies, magazines of renewable resource, websites. The basic aim of the paper is to Analysing the Opportunities for entrepreneurs in green entrepreneurship with special reference in renewable resource energy. This paper shows the need of entrepreneurship in renewable energy resources by analysis of data.

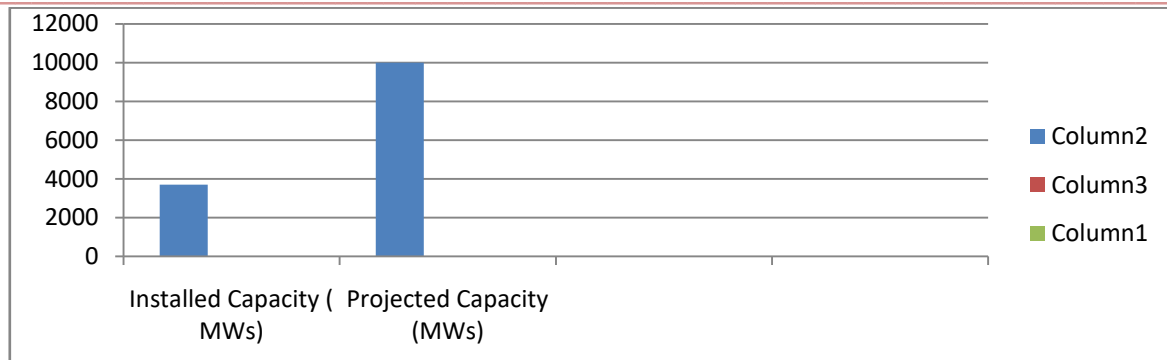
Green Entrepreneurship- Defination and various areas for working

Defination and explanation of term green entrepreneurship is defined in diffrent diffrent manners by the researchers. In past years considerable intrest and research have been devoted to understanding the determinates of green growth. However, an important and relevant issue seems to have escaped the attention of both economists and policy-makers: ultimately, green products and technologies are to be introduced into the marketplace by 'green' entrepreneurs. These are the economic actors who make it possible to turn ideas into a reality, by transforming prototypes into commercially viable products. However, the majority of policy mechanisms that have tried to enable green growth are aimed at identifying the technological innovations capable of mitigating the human impact on the environment and addressing global environmental issues - such as climate change, land degradation and loss of biodiversity. [Green Entrepreneurship –Missing link toward a greener economy Farinelli, Bottini 3/42011]¹. Developed countries and international organizations tend to put more emphasis on the term 'green' and on market opportunities, while developing countries tend to focus more on the term 'entrepreneurship' and on market needs. Chinese and Indian entrepreneurs, for example, are genuinely transforming the emerging economies by developing affordable products that meet the needs of the lower level income group of economy, but still need to become more green (Khanna 2011). Developed countries tend to spend large amounts of money on green innovation projects, but then face the missing link of entrepreneurs who move the product from a prototype to a commercially viable product (Macilwain 2011). In India green Entrepreneurship refers "to open a new venture to create new products and services that can help to conserving environment and to serve to Bottom of the pyramid.

Green Entrepreneurship- Green Entrepreneurship will be defined as a "Introducing new business that belongs to develop environmental friendly products and services or to use renewable resources or for the benefit of the environment". Entrepreneurs always have new creative ideas, they find opportunities from the problems of society & try to solve them in innovative way. Energy sector has great opportunity to create more sustainable technology as we are facing electric crisis and grid failure. Developing countries like India need more of renewable energy resources & for those who have no access of basic like-Electricity, Pure water, Fuel energy, wind energy etc. These areas are more related to the technology so people who have knowledge of technology in these fields has great potential to move into Green Entrepreneurship. Entrepreneurial activities are related to Schumpeter's (1934) notion of 'creative destruction', in that entrepreneurs promote change in the economic and business environment and overtake the old ways of operating. Yet, there seems to be no clear definition of entrepreneurship in the literature, especially with regard to the degree of innovation and size of a particular activity that is necessary to count as entrepreneurial (Ulijn & Brown 2003). There is a general consensus that an entrepreneur generally acts on a valuable opportunity and is driven by a special motivation (Miller 2003). Thornton (1999) defines entrepreneurship as the creation of new organizations, which implies a certain degree of innovation and size. This creation occurs as a context-dependent, social and economic process.

Opportunities in Renewable Resources

India is a vast country with a large amount of renewable resources. Only need is to utilise them optimally. India is an only country who has a separate department for the non-conventional energy in Ministry of Non-Conventional Energy Sources (MNES). In October, MNES was renamed the Ministry of New and Renewable Energy. According to Ministry of renewable resources Specifically 3,700 MW are currently powered by renewable energy sources (3.5 percent of total installed capacity) (Graph -1). This is projected to be 10,000 MW from renewable energy by 2012 and accelerated rural electrification programmes to lighten 100,000 villages.



[Peter meisen 2006 overview of renewable potential of India]⁷. India has 150GW of renewable energy potential, over 50% of it in wind and solar power. Developing renewable energy can help India increase its energy security, reduce the adverse impacts on the local environment, lower its carbon intensity, contribute to more balanced regional development. The country has set a goal of capacity addition of 62,000 megawatt in the 11th Five Year Plan during the 2012-2017. The scope for investment in the power sector over the next few years is well over \$400 billion (over INR 180 billion). It is estimated that over 9 GW of solar would be installed between 2011 and 2016 in India, according to the report The India Solar Market: Strategy, Players, and Opportunities. The Indian solar market is energized by the evolving National Solar Mission (NSM) and state-level incentives, as well as an inflow of global solar players. Renewable energy has been a success story in India. From March 2007, installed GW of renewable energy doubled by the end of 2011 to 22 GW, accounting for 11% of India's power generation capacity. India has led nations in the growth of renewable energy investment in 2011, with a 52% jump to \$10.3 billion. Sumant Sinha left Suzlon to form renewable Wind Power, which hopes to build a gigawatt of generation capacity by 2015. Goldman Sachs bought majority stake in the company for 10 billion rupees (\$200 million) in September 2011.

India has estimated potential from Renewable Energy resources (MWs)

Sources	Potential
Biomass energy	19500
Solar energy	20000
Wind Energy	47000
Small Hydropower	15000
Ocean Energy	50000

These data shows the immense opportunities for the Entrepreneurs to serve in untapped markets because recently we are using very less of our capacity it needs to be improve so we can meet our increasing demands. Entrepreneurs by opening new ventures which provide solutions of the basic problems of the rural areas can bridge the gap in the energy sources.

CLASSIFICATION OF GREEN ENTREPRENEURSHIP CONCEPTS

Green entrepreneurship emerged in response to the environmental challenges that we are facing as a human race. In a broader sense, it could be well defined as pertaining to the process of creative destruction, which was described by Schumpeter (1934) in the first half of the 20th century. In his seminal work about ecopreneurship, Blue (1990) writes that it is a conscious choice of the entrepreneur who decides to implement environmental goals into his or her own business. This conscious decision is followed by obtaining the necessary skills and implementing the best case practices into daily operations. Berle (1991) adds an important point in his book The Green Entrepreneur: "In the final analysis, in environmental entrepreneuring, the big factor is the education of the consumer. After all, the consumer votes with his dollars at the cash register". This is a significant difference compared to the available definition of social entrepreneurs,

where the profit orientation is not present (Dees, 2001). However, researchers in the field of green entrepreneurship often seek comparisons between sustainable entrepreneurs and social entrepreneurs (Hall et al., 2010; Parrish and Tilley, 2010; Schaltegger, 2010)⁸, because both types are connected in their common goal to improve the environment in which they are present (Isaak, 2010). The term green entrepreneurship has three major variations which are commonly used in the scientific realm ecopreneurship, environmental entrepreneurship(enviropreneurship), and sustainable entrepreneurship. Even though the terms are significantly related to each other, differences do in fact exist, which will be examined in the following four paragraphs.

3.1 Green entrepreneurship

The term green entrepreneurship stems from Berle's (1991) book the green entrepreneur: Business opportunities that can save the earthhand make you money. As the title suggests, it's a rather practically oriented book that touches on topics such as recycling, nature preservation, renewable energy implementation, etc. In his book, Berle (1991) noted how "One man's garbage is another man's treasure". Aninteresting observation is that almost all the definitions related to green entrepreneurship are also related to the start-up phase of a company and the ability of the person or the company to align activities with environmental protection. Green entrepreneurs are embracing environmental values as a core component of their identity and seeing them as a competitive advantage of their company in the market place (Allen and Malin, 2008). Research studies also argue that the difference between ecologically-oriented start-ups and conventional start-ups lies in the environmental considerations of the green entrepreneurs themselves (Schick et al., 2002). However, it is also recognised that green and ethical entrepreneurs [emphasis added] may well have mixed motivations; their motives may not be solely green but a combination of green, ethical and social motives instead. These are often difficult to separate (as, indeed, the concept of sustainability reflects) (Walley and Taylor, 2002).

3.2 Environmental entrepreneurship (Enviropreneurship)

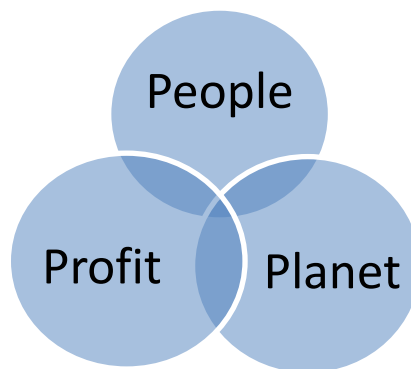
Environmental entrepreneurship, often labelledas enviropreneurship, is a term specifically used to identify entrepreneurial ventureswhich aim to put environmental protection at the core of their business activity. They are often family-driven businesses operating in a societalenvironment, and which are strongly oriented towards environmental protection (Meek et al., 2010). When comparing the definitions forenvironmental entrepreneurship with their counterparts from the field of green entrepreneurship research, a relatively low identification ofwhether the entrepreneurial activity is taking place within new ventures or incumbent firms was discovered. This finding is in line with thethesis of the research tandem Hockerts and Wustenhagen (2010), who propose that the industry transformation phase is characterized bythe sustainable intentions of SMEs (in the study referred to as "Davids") being followed in the second phase by pioneering incumbents (in thestudy referred to as "Goliaths") mimicking some of these intentions, e.g. retailers bringing environmentally friendly products into themainstream channels. On the contrary, York and Venkataraman (2010) argue that environmental entrepreneurship happening in start-ups orSMEs can potentially supplement regulations, corporate social responsibility, and activism in resolving environmental problems. The authorsfurther explain: "Entrepreneurs can supplement the effectiveness of incumbent firms and institutions, but they can also create a new worldthrough doing things existing firms and institutions do not" (York and Venkataraman, 2010, p. 449).

3.3 Ecopreneurship

When Blue (1990) applied the term ecopreneurship for the first time in the literature, it described an individual who is aware of theenvironment and is able to bring about the best results within the given circumstances. He argued that this ability can be learned, and suggested precise steps that managers ecopreneurs need to pursue to bring about the desired change. It was only in 1998 thatecopreneurship became strongly connected to ecology and, within a few years, to sustainable development as well (Pastakia, 1998). Withinthe ecopreneurship definitions we can observe a strong focus on innovation ⁹(Pastakia, 2002; Schaltegger,2002; Schick et al., 2002; Allen andMalin, 2008) which is connected to the ecopreneurial activities of SMEs, institutions, and the corporate sector¹⁰ (Walley and Taylor, 2002; Russoand Lundquist, 2003; Gibbs, 2009). "Ecopreneurship can thus be roughly defined as 'entrepreneurship through an environmental lens'"(Schaltegger, 2002, p. 47).

3.4 Sustainable entrepreneurship

In this article, sustainable development is referred to as an ability to meet the needs of the present generation without compromising the ability of future generations to meet their own needs (WCED, 1987). Through this lens we can see that "Sustainable entrepreneurship is thus not only associated with the promise of more traditional concepts of entrepreneurship, but bears additional potential both for society and the environment"¹¹ (Kuckertz and Wagner, 2010, p. 525). Topics related to sustainable development have been present in conference discussions now for almost four decades. One of the outcomes from the UN Conference on Human Environment (1972, [section] 6) states: The broad spectrum of the definitions of sustainable entrepreneurship indicates a unique balance between a focus on societal, environmental, and economic issues. These three divisions are also called as three Ps: People, Planet and Profit. These three elements are also included in the corporate reporting standards at the end of the last century known as the "**triple-bottom-line**" coined by John Elkington (Elkington, 1998). Some researchers show that sustainable entrepreneurial firms not only see sustainability as a part of their core business activities, but as the aim for mass-market transformation beyond the eco-niche as well¹¹ (Hockerts and Wustenhagen, 2010). "Entrepreneurship for sustainable development holds a bold promise, namely, that because entrepreneurial opportunities exist which are caused by market imperfections, individuals will pursue these in the expectation of entrepreneurial [returns]" (Kuckertz and Wagner, 2010, p. 527).



Triple – Bottom - Line Concept

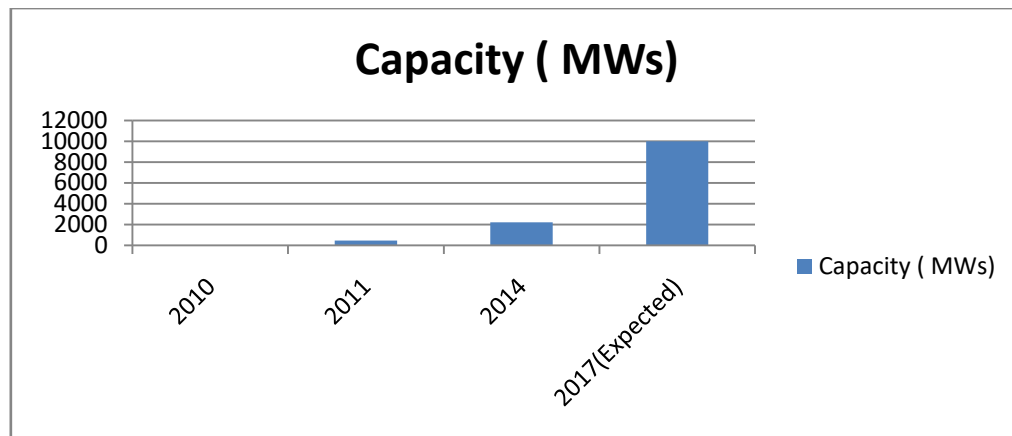
Renewable resources

Renewable resource energy is a substitute for traditional resources of energy. Countries like India who is blessed with the natural resources. Currently we are not able to fulfil our domestic demand only with the conventional energy resources. Conventional energy resources in India mainly are Coal, Natural gas, Petroleum, fossil fuel. These energy resources are limited and this is the reason that's why there is a need for renewable energy sources. Renewable resources are also known as non-conventional energy resource which is continuously replenished by the natural process. For example solar energy, wind energy, bio energy, bio-fuels, Hydropower etc. (Application of non- conventional & conventional energy sources). Renewable energy converts the energy found in sun light, wind energy, bio energy, geo thermal heat or bio mass into a form.

Solar Energy sources and trend

India is blessed with the solar energy we get sun light round the year nearly 300 to 320 days on land area. India's theoretical solar power reception is nearly about 5000 trillion /year. The daily solar incident over India varies 4-7 Kwh/m² with 1500-2000 sunshine hours per year depending upon the location. The amount of solar energy produced in India that was only 1% of its total energy demand in 2007. India's largest installed solar plant is Charanka solar park which is situated in Gujarat solar park. Charanka solar park is the group of 17 thin films photovoltaic power system on a 2000

hectare and this will make this park largest in the Asia. This solar park is expected to save around 8 million tonnes of carbon dioxide and save 900000 tonnes of natural gas per year. This power plant is made by 84 different developers for making the total of 968.34 MWs which will go till 1000 MWs. Rajasthan is going to make world's largest solar power plant near the Sambhar lake, Jaipur. This project will be known as an Ultra Mega Green Solar Power Project with a capacity of generating 4000 MWs. The power project of 4000 MWs will generate nearly 6000 million power per annum. This is the demand of time to use the best renewable resources which we have and to produce more and more energy for satisfying the need of domestic demand of the country.



Graph - 2

Entrepreneurs in Solar Energy Business Opportunities

This is clear that there are immense opportunities in solar energy business and the correct situations for the entrepreneurs to come forward for doing their own business. Entrepreneurs are always risk takers and opportunistic they can build a sustainable business model to generate energy and profits. Solar energy can be used to making the various housing appliances, rural electrifications, agricultural support, solar panel making and solar water heater etc. entrepreneurs are choosing the path of sustainable energy business and they are developing various business models here I will discuss about those entrepreneurs who changes the villages into a sustainable energy models. Entrepreneurs are working in this field and they are using solar power in making new electronic devices. Most of the engineers are coming in the solar energy business because of the knowledge for the particular techniques require developing the solar panels and other solar based devices. Solar energy today provides an opportunity to make electronic devices which includes eco-friendly devices such as solar power pad which is using to charge mobile, tablets, digital camera and other electronic devices this device is made by the jignesh nishar founder of evaki ltd. Other reason of opting the solar energy as the business opportunity is the large in the market place and less competitors are their. They are supported by government schemes, subsidies and the incentives for small entrepreneurs. As far as the technology is concerned engineers has a remarkable opportunity in making green housing projects. Engineers and other entrepreneurs who are working in solar energy can make a set up for training the rural people and can encourage them to make or work in solar energy sector.

4. DISCUSSION AND CONCLUSION

After several decades of environmental research, it's now rare to find a scientist who disagrees with the notion that humans are severely degrading many of the Earth's ecosystems. In addition, even though debate continues on just how much human activities affect the environment (for instance discussions on the Kyoto protocol), the business sector is often viewed as one of the largest contributors to environmental degradation (Cohen and Winn, 2007). This literature review aimed to structure the complex view of academic articles written about the topic of green entrepreneurship. It has focused not just on environmental issues, but on social and economic foundations as well. Green entrepreneurs are often pictured

as the catalysts which can bring about the desired change in society, and who in addition can change the behaviour of the existing firms in the market place to make them more responsible (Parrish and Foxon, 2009; Hockerts and Wustenhagen, 2010; Schaper, 2010). It is therefore clear that researchers and educators need to devote more attention to this topic that emerged two decades ago, especially as they work should move beyond the anecdotal and small-scale case study evidence of the current research (Gibbs, 2009). Universities play a unique role in this process. In particular, they need to implement green syllabi into entrepreneurship education and focus especially on how to provide students with business experience that can serve as a prerequisite and springboard for the successful realisation of their entrepreneurial ideas (Isaak, 2010; Kuckertz and Wagner, 2010). An interesting area of research would be to review each of the different elements of the green entrepreneurship, i.e. green sourcing, green production, and green marketing, and the ways these elements influence one another. To date, there are only a few research studies in this area (Kirkwood and Walton, 2010; Paulraj, 2011) which specifically provide perspectives from North America and Australia. A European take on this topic would certainly be of value. Researchers need to specifically ask under what conditions we can expect entrepreneurs to pursue sustainable values while maintaining a balance of economic growth that still manages to advance environmental and social objectives (Hall et al., 2010). We can expect that these conditions will differ based on the social norms present in the environment where the venture is based (Meek et al., 2010). This means that there is a need for more research studies done outside of Western societies, which to date remains rare. In addition, it would be valuable to review how entrepreneurs recognise opportunities in the field of sustainable energy resources.

Entrepreneurial Success Stories in India in Green Entrepreneurship as I told in starting of my paper that Entrepreneurs are Opportunity seekers, they provide innovative and creative products and services for doing work done. They are not only thinkers for self-development they think about society and provide solutions for bottom of the Pyramid.

Husk Power Systems (HPS), Patna, India

Husk Power System is founded by the Gyanesh Pandey he pioneered and popularised Rice Husk based power plants in rural areas. He is B.tech and MS in Electrical power in 2001. Husk Power Systems (HPS) provides end-to-end renewable energy solution by installing, operating 25-100 kW “mini power-plants” and wiring villages that deliver electricity as a “pay-for-use” service to villages and hamlets of about 2000-4000 inhabitants in India. HPS has pioneered a technology that cost-effectively converts biomass waste (e.g. rice husk, mustard husk / stem, corn cob, certain grass etc.) into electricity using the process of Gasification. The company installs min-plants at the lowest cost per Watt of capacity – lower than not only all the renewable but conventional thermal as well. HPS piloted its first plant in 2007 and has to-date installed more than 85 plants that electrify more than 400 villages in 5 districts of Bihar. HPS employs more than 350 people (90% from the rural areas) and is managed out of its head office in Patna. Almost every equipment, process and skill level required for HPS’ operations and scale-up have been innovated as a result of extensive R & D efforts. HPS started with successfully demonstrating the world’s first electricity generation plant using 100% “producer gas” produced by gasification of Rice Husk – previously considered not feasible. HPS has developed an entire ecosystem of products and processes to enable rural electrification. These include a comprehensive training program, Cloud based Management Information System (MIS), world’s cheapest pre-paid meter, remote monitoring system, absorption chiller, mobile based tariff collection system etc. Gyanesh Pandey’s Husk Power Systems, generates power using decentralized small-scale plants and sells it at low rates to rural households. Since 2009, it has raised \$400,000 to \$1.3 million from investors like Shell Foundation, and the International Finance Corporation. Achievement International Ashden Awards (UK) for sustainable energy for HPS for their work toward sustainable energy development.

Renew Power

Owner of Renew power is Suman Singha who left Suzlon to form Renew Wind Power, which hopes to build a gigawatt of generation capacity by 2015. Goldman Sachs bought majority stake in the company for 10 billion rupees (\$200 million) in September 2011.

Bare Foot Collage

Barefoot College, established in 1972, inspires this town with the conviction that solutions to rural problems lie within the community. These solutions are broadly classified by Barefoot College into solar energy, healthcare, education, water, rural handicrafts, people's action, communication, women empowerment, income generation, wasteland development, electricity and power as well as social awareness and conservation of ecological systems in rural communities. Barefoot College was founded by Sanjit 'Bunker' Roy, an Indian social activist and educator. Spread over more than 8 acres of land, the campus of Barefoot College was built between 1980 and 1986, designed by a team of rural 'barefoot' architects, masons, blacksmiths, farmers and members of women groups who sat and struggled through the initial basic designing of the campus. This institution believes in imparting informal, non-structured, on-the-job practical training by identifying the poor, unemployed youth who have been unable to finish their formal education and have returned to their respective villages as dropouts. The five principles which are an integral part of the functioning of the college are equality, collectiveness, self-reliance, decentralization and austerity. Barefoot college is a NGO that has been providing basic services and solutions to problems in rural communities for more than 40 years, with the objective of making self-sufficient and sustainable. These 'barefoot' can be broadly categorized into the delivery of solar electrification, Clean Water. With a geographic focus on the least developed countries.

Conclusion:-

Paper clearly suggest that there are huge potential for Entrepreneurs in Green Areas and in renewable energy if they take problems as an opportunities and ready to take risk then they can come up with unique ideas. This is an exciting area to be involved in. At its best, entrepreneurship is about harnessing the enthusiasm, initiative and creative energy of individuals. When engineers come with ideas of new technology they can create new milestones. When this dynamism is applied to developing business solutions that help move enterprise along more sustainable ways, then the results have the potential to be truly fascinating—and rewarding. These examples suggest the initial challenges facing renewable energy in India have largely been overcome. Indian power distributors have become the key roadblock in the growth of renewable energy. The power grid must be modernized to handle more large-scale connected projects. Power distribution companies are the main buyers of renewable power and their financial health is deteriorating rapidly. Fixing this new set of problems requires transforming the existing system. We may well see grid modernization follow the success of renewable energy, Housing projects are evolving due to the use of solar energy. Entrepreneurs with their skilled work potential are coming forward to take advantages of opportunities.

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